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EXAMINER	
CHANG, EDITH M	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/186,977	ARMISTEAD, R. ASHBY	
	Examiner	Art Unit	
	Edith M Chang	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 33 and 34 recites the limitation "data framing information". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 5-7, & 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6263016 B1) in view of Osler et al. (US Patent 6038222).

Regarding **claims 1 & 22**, Bellenger et al. discloses a multiple-modem system and a data communication interface (FIG.4) comprising: a data bus (410 FIG.4); a resource internal state

memory (420/430 FIG.4) capable of storing internal state information for an existing data connection (column 13 lines 1-15, 25-40), the internal state information containing data communication information developed by a data-handling resource over the course of the existing data connection (column 13 lines 30-60, wherein the data communication information can be the line status in the activity table, rate of the physical line in the profile table, etc.); first (424 FIG.4, backup or local DSP) and second (414 FIG.4, line cards or primary DSP) data-handling resources connected to the data bus transformation for one or more data connections, each data-handling resource connected to the resource internal state memory such that internal state information from the first data-handling resource is savable in the resource internal state memory and is retrievable from the resource internal state memory by the second data-handling resource (column 13 lines 30-39, wherein the DSP table has the information of the DSP at line cards, the information of the DSP 424); and a data-handling resource controller (404 FIG.4) that responds to one or more conditions(1326, 1210B/P FIG.13A) indicating that data from a first data connection should no longer be directed to the first resource, by directing the data from the first data connection to the second data-handling resource without loss of connection (1348-1356-1220-1224 FIG.13B, wherein the conditions are idle or end, and the connection directed from the first to the second without loss of connection as indicated in 1348-1358 of 1218A FIG.13B). Bellenger et al. does not implicitly specify the data transformation in the memory, *however* Osler et al. teaches the memory in the modem to have the data information and data link control information stored (12 FIG.1 column 4 lines 33-40 where the memory resides; FIG.2-6, column 1 lines 34-42, column 3 lines 15-35, wherein the data information and link control information are defined for different state, such as the idle state when failure occurs).

As Bellenger et al.'s method handling the call session being idle/no data being transmitted (such as failure occurs), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the data transformation and data link control information taught by Osler et al. stored in the DSP table as DSP resource or the information on the last session in the subscriber table in the controller memory, or in the modem memory of 420 FIG.4 of Bellenger et al.'s interface to have a cost effective modem interface to reduce computational complexity (column 1 lines 34-40, column 2 lines 3-10).

Regarding **claims 2 & 23**, Bellenger et al. discloses the first data-handling resource/modem comprising a first digital signal processor (424 FIG.4), and the second data-handling resource comprises a second digital signal processor (414 FIG.4).

Regarding **claims 5 & 24**, Bellenger et al. discloses the first digital signal processor/modem resides on a first circuit card (402 FIG.4) within the interface, and wherein the second digital signal processor/modem resides on a second circuit card (400A FIG.4) within the interface and sharing a common bus (410 FIG.4) with the first circuit card.

Regarding **claims 6 & 7**, Bellenger et al. discloses the data-handling resource controller resides on a third circuit card within the interface (404 FIG.4), and the resource internal state memory (432 FIG.4) also resides on the third circuit card.

5. Claims 3-4, & 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6263016 B1) in view of Osler et al. (US Patent 6038222) as applied to claim 1 above, further in view of Green et al. (US 5949762).

Regarding **claim 3**, further Green et al. teaches the first and second digital signal processors reside on a common circuit card within the interface (68 FIG.2 & 3, column 6 lines 18-40 where the DSPs 68 reside on a card 58 FIG.2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the first and second digital signal processors residing on a common circuit card taught by Green et al. to provide a modem or multiple modems and its method for processing multiple calls simultaneously (column 1 lines 57-60, column 2 lines 37-47).

Regarding **claim 4**, Bellenger et al. discloses the data-handling resource controller and the resource internal state memory also reside on the common circuit card (404 FIG.4).

Regarding **claim 8**, Bellenger et al. discloses the first data-handling resource and the second data-handling resources (the DSPs of line cards FIG.4, the DSPs of 402 and 602 FIG.4 & 6, column 36 lines 10-14) but does not specify the multiple digital signal processors in one card. However Green et al. teaches the multiple digital signal processors reside on a common circuit card (68 FIG.2 & 3, column 6 lines 18-40 where the DSPs 68 reside on a card 58 FIG.2). As Bellenger et al.'s method passing the connections from one resource (the primary DSP) to other resources simultaneously (the backup DSP resources column 12 lines 50-65 where the primary DSP is bypassed), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have Bellenger et al.'s DSPs/modems implemented in the first data-handling resource; and the DSPs/modems in the second data-handling resource as well taught by Green et al. to provide a modem or multiple modems for processing multiple calls simultaneously (Abstract, column 1 lines 57-60, column 2 lines 37-47).

Regarding **claim 9**, Bellenger Green et al. discloses each circuit card comprise a card internal state memory (420/430 FIG.4).

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6263016 B1) in view of Osler et al. (US Patent 6038222) and Green et al. (US 5949762) as applied to claim 8 above, and further in view of Richmond et al. (US 6308286 B1).

Regarding **claims 10 & 11**, except explicitly specify transferring all or selected connections, Bellenger et al. discloses the backup data-handling resource can be DSP 402 (FIG.4 '016) and global DSP resource 602 (FIG.6 '016), further Richmond et al. teaches a 1:3 redundancy (FIG.3 '286). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have Bellenger et al.'s backup DSPs implemented in the first and second card respectively taught by Richmond et al. that the second data-handling resource can receive a simultaneous transfer of all connections or selected connections received by the first data-handling resource to the second data-handling resource to have bank of re-configurable redundant modem pool system (column 1 lines 10-15 '286, column 6 lines 31-34 '842) .

7. Claims 12 & 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6263016 B1) in view of Osler et al. (US Patent 6038222) as applied to claim 1 above further in view of Richmond et al. (US Patent 6308286 B1).

Regarding **claims 12 & 13**, further Richmond et al. teaches a 1:3 redundancy (FIG.3 '286). As Bellenger et al.'s trying to relieve the congestion, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the redundancy taught by

Richmond et al. in Bellenger et al.'s system to remove the first data-handling resource to use the spare resources to smooth the traffic and to have bank of re-configurable redundant modem pool system (column 1 lines 10-15 '286, column 6 lines 31-34 '842).

8. Claims 14, & 16-17, 19, 21, & 25-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richmond et al. (US Patent 6308286 B1) in view of Osler et al. (US 6038222) and Thaweethai et al. (US Patent 5546379).

Regarding **claim 14**, Richmond et al. discloses a data communication interface comprising: data bus (26 FIG.1); resource internal state memory capable of storing internal state information for an existing data connection (223d FIG.3, column 5 lines 50-54, column 6 lines 9-15, column 7 lines 50-61), the internal state information containing the data communication information developed by a data-handling resource over the course of the existing data connection, N+ 1 data-handling resources, wherein N > 1 (FIG.3, column 6 lines 53-65, wherein N=3 and N>1), each connected to the data bus, to provide data transformation for ~~one or more~~ data connections, each data-handling resource connected to the resource internal state memory such that internal state information from the first N of the data handling resources is savable in the resource internal state memory and is retrievable from the resource internal state memory by the N+ 1 th data-handling resource (the N+1 th data-handling resource is the spare one 220d FIG.3); and a data-handling resource controller (column 1 lines 44-46, column 2 lines 29-33, column 7 lines 10-20) that responds to one or more conditions indicating that data from a first data connection should no longer be directed to any one of the N first data-handling resources, by directing the data from the first data connection to the N+1 th data-handling resource without

loss of connection (column 1 lines 18-24). *However* Richmond et al. does not specify (1) the data link control information stored in the modem, (2) the data transformation and the resource providing one or more connections explicitly.

With respect to item (1), Osler et al. teaches the memory in the modem to have the data information and data link control information stored (12 FIG.1 column 4 lines 33-40 where the memory resides; FIG.2-6, column 1 lines 34-42, column 3 lines 15-35, wherein the data information and link control information are defined for different state, such as the idle state when failure occurs). As Richmond et al.'s system handling the call session being idle (such as failure occurs) of modem, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the data transformation and data link control information taught by Osler et al. stored in Richmond's modem memory (FIG.1 23/FIG.2 123) to save the link control state information to provide the real time information of the status of the modem to have a cost effective modem interface to reduce computational complexity (column 1 lines 34-40, column 2 lines 3-10).

With respect to item (2), Thaweethai et al. teaches the data transformation stored in the state memory (PATTERN STOR FIG.5, column 65 lines 46-52) and the data handling resource to provide data for one or more connections (FIG.5 wherein the MODEM connecting to the CONNECTION MEANS for receiving data). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to store the data transformation in the memory of the spare data handling resource, and connect the data handling resource to the connection means through switch 30 to have one or more connection taught by Thaweethai et al. in Richmond et

al.'s redundancy switchover systems to provide modem pooling capability (column 1 lines 17-19).

Regarding **claim 16**, Richmond et al. discloses the internal state information from each of the N+1 data-handling resources is savable in the resource internal state memory and retrievable by more than one of the N+1 data-handling resources (FIG.3 where N is 3).

Regarding **claim 17**, Richmond et al. discloses each of the data-handling resources emulates at least one modem (column 1 lines 18-24).

Regarding **claim 19**, Richmond et al. discloses a data communication interface comprising: a data bus (26 FIG.1); a resource internal state memory capable of storing internal state information for an existing data connection (223d FIG.3, column 5 lines 50-54, column 6 lines 9-15, column 7 lines 50-61, via the controller the internal state information is retrievable by any data handling resource), the internal state information containing the data communication information developed by a data-handling resource over the course of the existing data connection N data-handling resources, wherein N > 1 (FIG.3 where N is 4 and >1), each connected to the data bus transformation for data connections, each data-handling resource connected to the resource internal state memory such that internal state information from each of the data-handling resources is savable in the resource internal state memory and is retrievable from the resource internal state memory by any other of the data-handling resources; and a data-handling resource controller that responds to one or more conditions indicating that data from a first data connection should no longer be directed to one of the N first data-handling resources, by directing the data from the first data connection to another of the N data-handling resources (column 4 lines 8-16) without loss of connection (column 1 lines 18-24). *However*

Richmond et al. does not specify the data transformation, the resource providing one or more connections, and all data-handling resources receive data simultaneously explicitly, Thaweethai et al. teaches the data transformation stored in the state memory (PATTERN STOR FIG.5, column 65 lines 46-52); the data handling resource to provide data for one or more connections (FIG.5 wherein the MODEM connecting to the CONNECTION MEANS for receiving data); and all N data-handling resources receive data simultaneously (FIG.5). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to store the data transformation in the memory of the spare data handling resource, and connect the data handling resource to the connection means through switch 30 to have one or more connections and receive data simultaneously, taught by Thaweethai et al. in Richmond et al.'s redundancy switchover systems, to provide modem pooling capability (column 1 lines 17-19).

Regarding **claim 21**, Richmond et al. discloses the data-handling resource controller responds to one or more conditions indicating that data from a first data connection should no longer be directed to any one of N first resources, by directing the data from the first data connection to any idle data-handling resource (FIG.1/3, FIG.2, column 5 line 60-column 6 line 15, where the spare mode one is the idle one).

Regarding **claims 25-27**, Richmond et al. discloses a modem comprising: an internal state configuration capable of storing internal state information for an active modem connection (123 FIG.2, column 7-10) the internal state information containing the data communication information developed by a data-handling resource over the course of the active modem connection; and an external state-loading/saving subsystem (121 FIG.2) that pre-configures the internal state configuration of the modem for a pre-existing " active modem connection so that

the pre-existing data active modem connection can be transferred to the modem from another modem and communicate to an external device which is another modem (column 5 line 63-column 6 line 15 where the subsystem, the micro-processor, does the requirement claimed).

Regarding **claim 28**, Richmond et al. discovers a method of operating a data communication interface comprising multiple data-handling resources to provide data transformation for one or more data connections, the method comprising the steps of: periodically saving internal state information from an active data-handling resource in a location separate from the data-handling resource (column 6 lines 4-7, column 7 lines 61-65, where the polling scheme is implemented to request configuration file to save), the internal state information containing and data communication information developed by a data-handling resource over the course of a data connection; monitoring the active data-handling resource (column 2 lines 57-62) for one or more conditions requiring removal of a data connection from the active data-handling resource; and upon occurrence of a condition requiring removal of a data connection from an active data handling resource, loading internal state information related to the data connection into a second data-handling resource (column 6 lines 9-15) and transferring the processing of the data connection to the second data-handling resource (column 2 lines 49-65, where the means for controlling the switches transferring the connection). *However* Richmond et al. does not specify the data transformation of the internal state information; and the loading the internal state information of a data-handling resource having excess capacity sufficient to handle the connection. Thaweethai et al. teaches the data transformation stored in the state memory (PATTERN STOR FIG.5, column 65 lines 46-52); selecting a data-handling resource having excess capacity sufficient to handle the connection

(column 1 line 64- column 2 line 3); and the fastest to transmit queue to store the packets (column 4 lines 25-35). As Richmond et al. utilizing a pool of modems, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to store the data transformation in the memory of the spare data handling resource, and have the bandwidth-on-demand apparatus and methods taught by Thaweethai et al. to provide modem pooling capability (column 1 lines 17-19).

Regarding **claim 29**, Richmond et al. discloses the second data-handling resource comprises a redundant resource (20b FIG.1/220d FIG.3 & FIG.2, where the 20b is the redundant resource).

Regarding **claims 30 & 31**, Richmond et al. does not specify the active data-handling resource can receive multiple simultaneous data connections (FIG.3), and distribute the connections to data handling resources having excess capacity. *However* Thaweethai et al. teaches the active data-handling resource can receive multiple simultaneous data connections (CONNECTION MEANS, MODEM 1-n, and the common bus/connection between them in FIG.5) and the selecting a data-handling resource having excess capacity sufficient to handle the connection (column 1 line 64- column 2 line 3). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the multiple data connections taught by Thaweethai et al. in Richmond et al.'s redundancy switchover systems (wherein the 30 FIG.1/230 FIG.3 '286 connected to the common bus '379) and the bandwidth-on-demand apparatus and methods taught by Thaweethai et al., to receiving multiple simultaneous data connections and transferring the processing of each of the multiple data connections to the second data-handling resource; distributing the processing of the multiple data connections to

multiple data handling resources having excess capacity to provide modem pooling capability (column 1 lines 17-19 '379).

Regarding **claim 32**, inheres the limitations of claim 28, further Thaweethai et al. teaches saving of internal state information depending on the data connection load (column 4 lines 24-40, lines 46-55 where the queue saves the packet when the variable saves new loading value, both saves information depending on the data connection load).

Regarding **claims 33 & 34,** inheres the limitations of claim 28, further Thaweethai et al. teaches saving the packet in the "fastest to transmit" queue (column 4 lines 24-30), the packet including the frame acknowledgement information and delaying/saving the sending of a frame until frame receipt information has been saved.

Regarding **claim 35**, inheres the limitations of claim 28, further Thaweethai et al. teaches saving transmitted frames at least until the frames are acknowledged (column 4 lines 24-35, where the queue of each physical interface saves/buffers packets received from the specific serial interface which are acknowledged, before placed in the "fastest to transmit" physical queue).

9. Claims 15 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richmond et al. (US Patent 6308286 B1) in view of Thaweethai et al. (US Patent 5546379) as applied to claims 14 and 19 above, further in view of Entenman (US Patent 4245342).

Regarding **claim 15**, further Entenman teaches the N+l th data-handling resource is only assigned data from the first data connection in response to the conditions (FIG.2, column 1 lines 45-53, column 4 lines 7-11, wherein the left most resource is the first data-handling resource connected to the first data connection). At the time of the invention, it would have been obvious

to a person of ordinary skill in the art to have the switchover taught by Entenman to have an improved modem control system (column 1 lines 12-15).

Regarding **claim 20**, further Entenman teaches the data-handling resource controller drops the first connection when all functional data-handling resources are busy at the time of occurrence of the one or more conditions (column 4 lines 7-11, wherein when the spared modem is assigned already/busy, the connection is dropped stated in column 3 lines 45-50 & 59-65). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have Entenman's redundancy modem control to have an improved automatically operative modem redundancy control apparatus (column 1 lines 10-17).

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richmond et al. (US Patent 6308286 B1) in view of Thaweethai et al. (US Patent 5546379) as applied to claim 14 above, further in view of Evans et al. (US Patent 6307880 B1).

Regarding **claim 18**, Richmond et al. discloses the satellite modem and suggest it for the telephone switching system (column 9 lines 50-60), but does not explicitly specify the voice codec for the modem. *However* Evans et al. teaches a modem with the codec (FIG.3). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the data-handling resources emulates voice codec to have a voice and data capable modem (Abstract).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
February 25, 2004

CHIEH M. FAN
PRIMARY EXAMINER